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ABSTRACT

This study was designed to determine whether fewer and less serious injuries result from participation in touch football as compared with flag football. A survey was taken of 30 flag football games and 30 touch football games and the incidence of injuries was recorded on a checklist. Results of the survey suggest the following: (a) intramural or other programs sponsoring flag football leagues should investigate the possibility of reducing injury rates by playing touch football; (b) since linemen are the major injury victims, rules concerning contact at or near the line of scrimmage should be closely evaluated by program administrators and strictly enforced by game officials; and (c) players playing on nylon artificial fields should be strongly encouraged or required to wear long pants and long sleeve shirts or elbow and knee pads to reduce abrasions. (JS)

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A COMPARISON OF INJURIES BETWEEN FLAG AND TOUCH FOOTBALL

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Introduction

Athletics in general and football in particular have recently come under close scrutiny due to the alarming number of participants who sustain some type of injury while competing. Studies and articles have been written and conferences planned which have attempted to reduce injury rates and/or shed some light on the problem at the high school level (1), the college level (2,3,4,5,6), and even the professional level(7).

The University of Hawaii Intramural Program is similar to that of many other large universities and includes flag football as one of the most popular activities offered. Injuries in flag football far outnumbered those in other sports and were a constant source of concern to the staff. Several rule changes, meetings and clinics, and suggestions to participants concerning equipment did not seem to reduce the injury rate significantly.

One suggestion was made to change from flag football to touch football. This was met with some resistance because flag football is a varsity sport in some local high schools and is extremely popular with intramural participants. The idea was dropped and injuries continued unabated.

It was felt by some staff members that touch football would reduce injuries because of a reduction in running plays, and the fact that the ball carrier could be stopped without having to be in as close contact as that required to grab a flag. Others disagreed believing that touching did not require the defender to approach the ball carrier under as much control as that required to grab a flag and this would ultimately result in more violent collisions with a resulting increase in injuries.

Finally, it was decided to conduct a study comparing injuries between flag and touch football.

SP 009 380

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Hypotheses

The major hypothesis was fewer and less serious injuries would result from participation in touch football as compared with flag football.

Three additional hypotheses were tendered:

1) The closer a player is to the line of scrimmage the more apt he is to be injured.
2) More injuries will occur to the extremities than the trunk and head and these will cluster as to type of injury.
3) Injuries will increase with playing time.

Procedures

A graduate student and a university instructor recorded the incidence of injuries on a checklist during the playoffs of men's football. Both recorders had a competent background in anatomy, physiology and first aid in physical education.

Sixty games were monitored with 30 flag football games and 30 touch football games included in the survey. Playoff games were used since it was single elimination play, and teams could be assumed to play their best. Four divisions of play-offs were included and two divisions were selected at random for flag play (A and D) and two divisions for touch play (B and C).

All games were played on Tartan Turf fields 100 yards X 40 yards divided into 4 equal first down zones and 2 end zones of 10 yards each. The only difference in rules was in flag play the runner's flag had to be pulled and in touch play the runner had to be touched between the shoulders and the knees to terminate his progress.

Results and Discussion

Several attempts to reduce injuries in intramural flag football at the University of Hawaii met with little success. The data in this study indicates that a change

from flag to touch football might significantly affect the number of injuries to participants.

Table I shows a definite trend that flag football participation increases both the risk of injury and the chance that the injury will be serious when compared with participation in touch football. In all cases, injuries increased when flag football was played. In addition, when the Chi Square distribution was computed between degree of injury and type of game played, it was found to be significantly out of proportion to what would normally be expected.

The above finding might be clouded somewhat due to the divisional assignment to treatment groups. It is possible the ability level of the teams had a bearing on the frequency and severity of injuries recorded. Teams in the A division were those with the best records in round robin play and the D division was comprised of the least successful teams. This success might indicate harder and faster play which could result in more violent collisions during a contest. Conversely, the lack of skill of D division teams might significantly raise the possibility of injury due to players being somewhat out of control while playing. The injury rate might also be skewed toward the flag football teams because the A division was playing for the All-University Championship. Competition is always intense and spirited in this division although it does not seem to be out of proportion with the other divisional playoffs. In any event, a divisional break-down of A and C for flag football and B and D for touch may have been more appropriate.

Table II shows that linemen are far more prone to injury than those playing other positions. It is interesting to note the incidence of injury for a defensive lineman increases in flag football but decreases in touch football and the opposite is true for the offensive line players. This is probably due to the increased running plays in flag football allowing the offensive team the opportunity to fire out and block the

defensive line. The touch football play of an offensive lineman is confined more to protecting the passer or playing the role of a pass receiver which places him in a more vulnerable position. This latter point agrees with the findings of Stevenson (6) and Kraus and Colbert (2).

The major difference in findings between this and other relevant studies is in the injury rates of linebackers. This seems the safest place to play according to the data of this study but this was not found to be true in a paper previously published in NIA Proceedings (2). The reason for this is unclear but might be explained by reporting discrepancies as to player position when injured.

Generally speaking, it may be stated that the closer a player is to the line of scrimmage, the greater his chances are to be injured. This hold true except for linebackers based on the data collected. A disproportionate amount of injuries occur to linemen and this is seen in the significant Chi Square value in Table II.

Type and location of injuries are presented in Table III. A quick perusal of the table reveals the extremities, primarily the elbows and knees, are the most injured location of the body. The large majority of these injuries are abrasions, and this is due to the games being played on Tartan Turf. Since the weather is very moderate in Hawaii, most of the players wear shorts and short sleeve shirts which greatly increases the possibility of scrapes and burns from sliding on the nylon field.

The extremities also lead the head and neck and trunk areas in sprains and strains and to a lesser degree contusions. The trunk is the least injured area of the body with the head area primarily sustaining contusions, concussions, and lacerations.

The types of injuries and their location in this study generally agree with results of other researchers (2,6).

The extremely large Chi Square value reported in Table III is further evidence of the clustering of certain types of injuries with specific locations of the body.

It was expected that injuries would increase as game time lengthened. The lack of conditioning of players and/or fatigue affecting injury rates has been discussed or alluded to by other researchers (1,2,4). It was also felt that since the games monitored were single elimination playoff games there would be a tendency for players to take unnecessary chances and engage in dangerous play late in a game, especially if they were behind. This might occur for two reasons; one being the desire to turn the game around with a "big play", and the second having the objective of "punishing" the opponent as seen on television each Sunday on the Pro Football Game of the Week (7).

This hypothesis was not upheld. The Chi Square value for time of injury in touch and flag was only significant at the .10 level of confidence (Table IV).

The reasons for a negative finding for increased injury rates and time of game are probably explained in two ways. First, the assignment of groups to treatments might have confounded the data since flag football injuries increased in the second half as was hypothesized. However, this was not the case with touch football. Secondly, the first half, second half breakdown may not have been precise enough. A division by quarters or possibly 5 minute periods could very possibly have altered the data in a significant manner.

Conclusions

1. Intramural or other programs sponsoring flag football leagues should seriously investigate the possibility of reducing injury rates by playing touch football.
2. Since linemen are the major injury victims, rules concerning contact at or near the line of scrimmage should be closely evaluated by program administrators and strictly enforced by game officials.
3. Players playing on nylon artificial fields should be strongly encouraged or required to wear long pants and long sleeve shirts or elbow and knee pads to reduce abrasions.

TABLE I

Injuries Distributed According to Degree of Injury and Type of Game Played with Chi Square Observed Frequencies and Totals

	Recorded Injuries (Chi Square Distribution)			Percentage		
Degree	Touch	Flag	Total	Touch	Flag	Total
Serious	1	9	10	0.3	2.5	2.8
Minor	146	206	352	40.3	56.9	97.2
Total	147	215	362	40.6	59.4	100.0

χ^2 = 3.995, 1 df. Significant at .05 level of confidence.

TABLE II

Injuries Distributed According to Player Position and Type of Game Played with Chi Square Observed Frequencies and Totals

	Recorded Injuries (Chi Square Distribution)			Percentage		
Player Position	Touch	Flag	Total	Touch	Flag	Total
Def. Line	39	83	122	10.8	22.9	33.7
Line backer	7	22	29	1.9	6.1	8.0
Def. Back	32	38	70	8.8	10.5	19.3
Off. Line	54	43	97	14.9	11.9	26.8
Off. Back	15	29	44	4.1	8.0	12.2
Total	147	215	362	(40.5)	(59.4)	100.0* (99.9)*

*100.0% - Column Total
(99.9%)- Row Total
} Percentile totals vary slightly for columns and rows due to rounding.

χ^2 = 17.695, 4 df. Significant at the .01 level of confidence.

TABLE III

Injuries Distributed According to Type and Location

	Location	Type of Injury									
		Abrasion	Contusion	Concussion	Dental	Dislocation	Fracture	Laceration	Sprain	Strain	Total
Upper Extremities Area	Shoulder	1	5							5	11
	Clavicle										0
	Upper Arm	2	3					1			6
	Elbow	33	1							2	36
	Forearm	1						1			2
	Wrist	1					2		6	1	10
	Hand		2					1			3
	Finger						1	2	13		16
	Sub Total										83 - 23%
Lower Extremities Area	Hamstring									7	7
	Hip		2								2
	Thigh	3	11					1		11	26
	Knees	141	4					1		5	151
	Lower Leg	7	2							1	10
	Ankle		1					1	15	1	18
	Foot	1	5							2	8
	Toe	1						2	4	1	8
	Sub Total										231 - 64%

TABLE III (Continued)

Injuries Distributed According to Type and Location

Location		Type of Injury									
		Abrasion	Contusion	Concussion	Dental	Dislocation	Fracture	Laceration	Sprain	Strain	Total
Head and Neck Area	Jaw	1	1								2
	Face	2	4				1	1			8
	Nose		2								2
	Scalp							1			1
	Skull										0
	Eye		1								1
	Eyelid							3			3
	Lip							8			8
	Teeth				2						2
	Ear										0
	Head (CNS)			11							11
	Neck							1			1
	Sub Total										39 - 11%
Trunk Area	Ribs										0
	Chest	2	1							1	3
	Abdomen										1
	Kidney										0
	Back	2	2							1	5
	Sub Total										9 - 2%
	TOTAL	198	47	11	2	0	4	24	38	38	362

χ^2 = 1553.758, 189 df. Significant at the .01 level of confidence.

TABLE IV

Injuries Distributed According to Time of Injury and Game Played with Chi Square Observed Frequencies and Totals

	Recorded Injuries (Chi Square Distribution)			Percentage		
Time of Injury	Touch	Flag	Total	Touch	Flag	Total
1st Half	74	86	160	20.4	23.8	44.2
2nd Half	73	129	202	20.2	35.6	55.8
TOTAL	147	215	362	40.6	59.4	100.0

χ^2 = 3.785, 1 df. Significant at the .10 level of confidence.

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